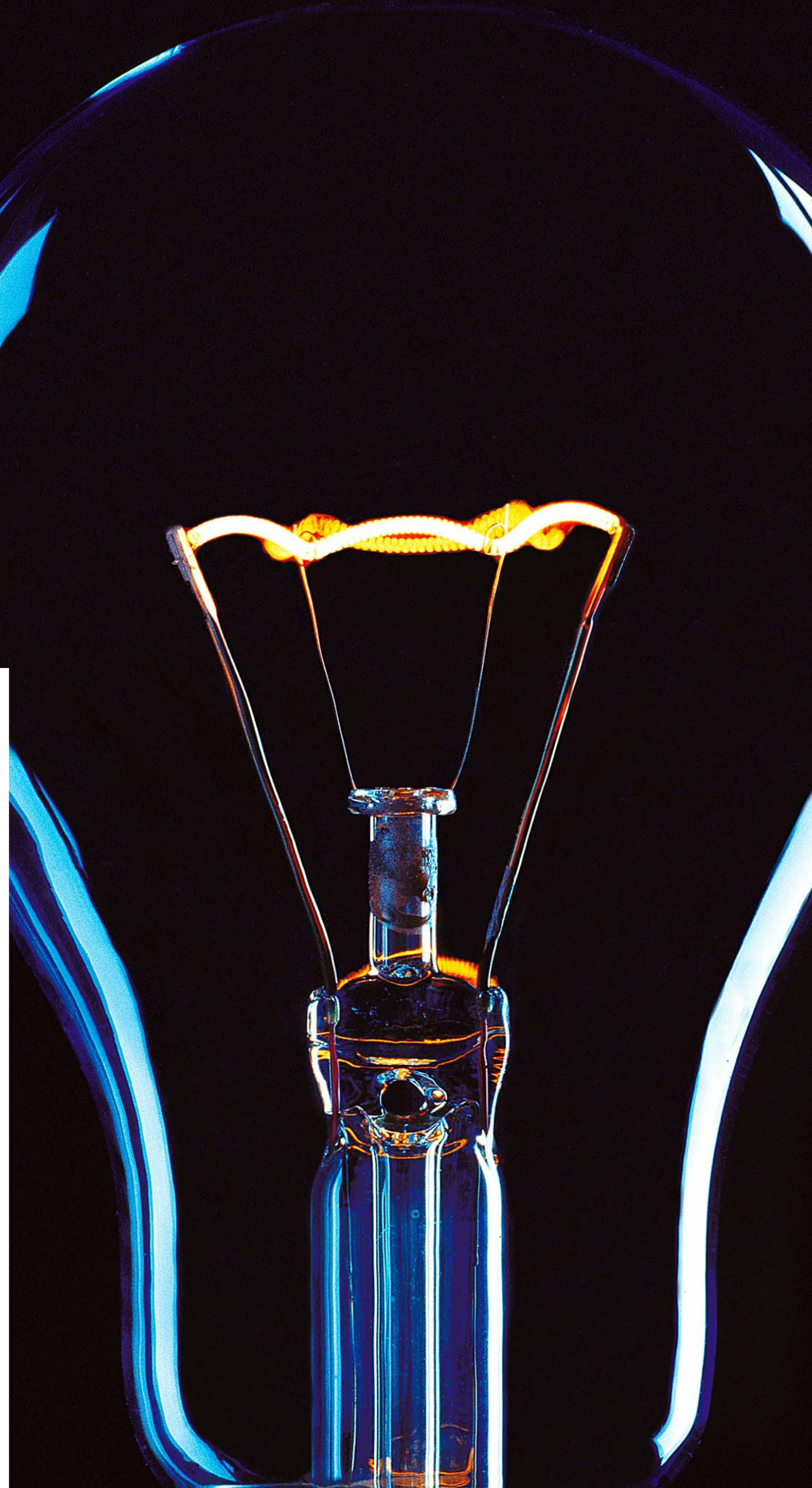
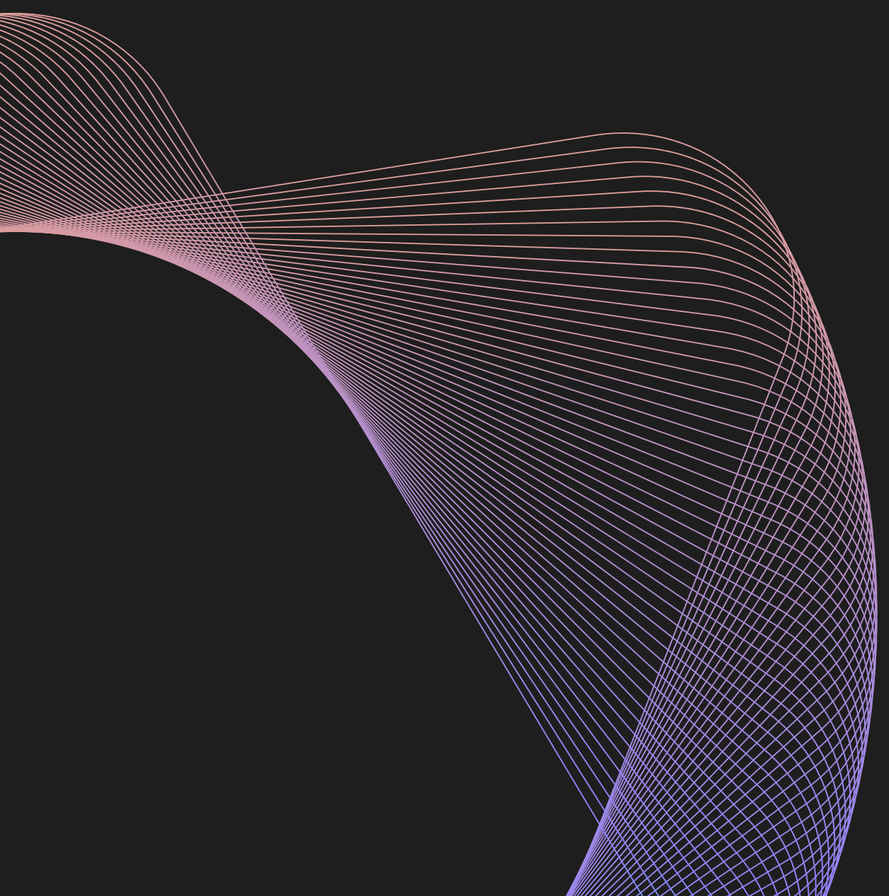
AI Underwriting: Crash Course for Credit Unions

Whether you’re in the middle of your digital transformation or are evaluating how new technology can help you drive member inclusion, personalize member services, and operate more efficiently—we’ve compiled answers to many of the burning questions we receive from Credit Unions considering AI underwriting.



What you need to know about AI

It seems like AI is everywhere and at times it can be difficult to sort through the hype. With competing priorities and the ever present demand to better serve your members, this eBook gives you the crash course you need to get up to speed.

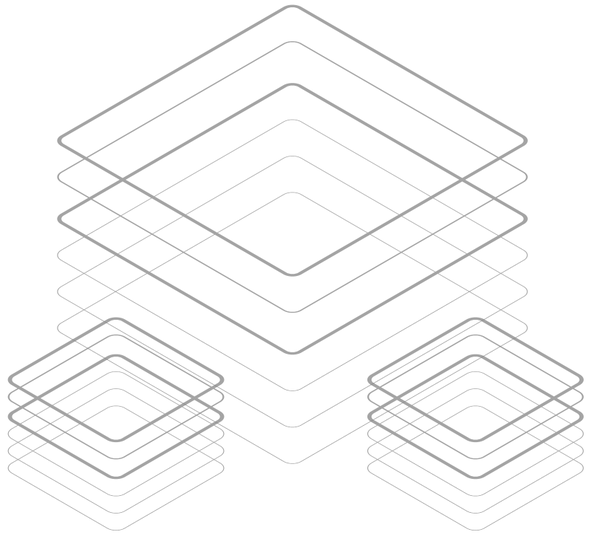


Why is underwriting a good application of AI?

Credit Unions pride themselves on superior service that comes from knowing their members. Ultimately machine learning is a tool to get to know your customers better. Better math leads to better decisioning, more approvals and lower defaults; this helps credit unions drive member inclusions, personalize their services, and keep up with the pace of members' financial needs.

Machine learning leads to better decisions by using an advanced mathematical approach to identify a spectrum of risk factors derived from all the information you want to include. Many credit unions have long operated using loan approval rules-of-thumb and only re-adjust to market conditions once or twice a year. That system works well for clear approvals or rejections – but not so well for deciding those in the middle.

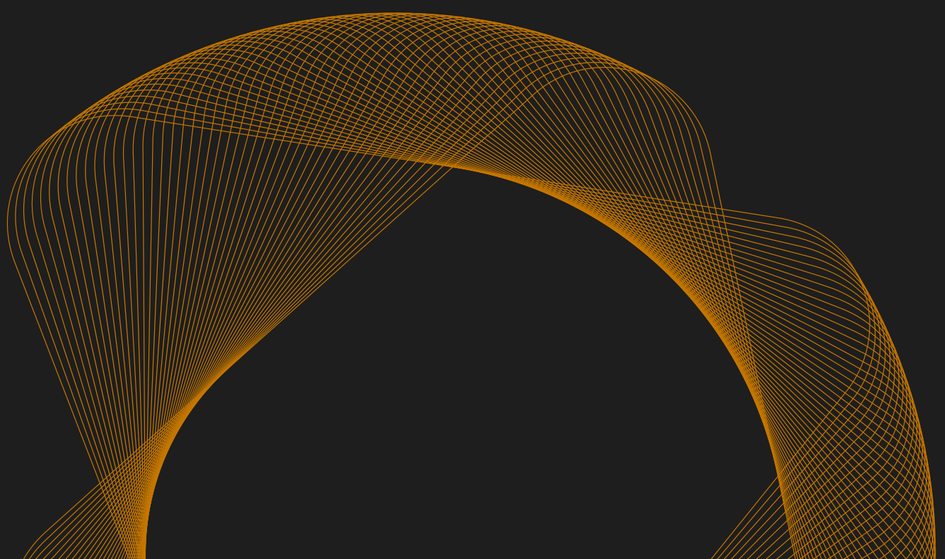
Machine learning provides clear sorting and decision support to determine what loans to approve and at what rate – while tuning your system as often as you like. Zest users typically find they can raise loan approvals 15% without taking on additional risk – or slash losses 30% while keeping approvals constant. To date, Zest users have captured an extra $1 billion in profits.



Online lenders are quickly grabbing market share through their ability to make quicker judgments on loans and provide focused rates to borrowers. Yet credit unions have a reputation as more deliberate technology adopters as a result of their non-profit status and general prudence with committing members' capital. Until recently, this wait-and-see approach with advanced technologies served credit unions well. But for the first time in the 25-year history of the University of Michigan's American Consumer Satisfaction Index, credit unions lost their lead to banks in the November 2019 survey.

The main finding by ACSI: as technology improves, customer satisfaction improves. So when should credit unions adopt machine-learning for lending? No time like the present. It's not too late, but competing institutions have a head start. A fourth-quarter 2018 survey by Fannie Mae found credit unions the least-aware of financial institutions about AI and machine learning, at 39% compared to 75% of mortgage banks and 53% of depository institutions. Awareness among peers and competitors is no doubt greater today – the same survey reflected expectations of AI adoption to double by late this year, with only 2% of institutions not considering machine learning.

Is right now really the right time for AI adoption?



AI seems like a luxury not a necessity.

While investment in new technology can sometimes seem like a luxury, AI for underwriting strikes at the heart of many credit unions' mission: to serve the financial well-being of its members. AI for underwriting, especially from Zest, serves to make fair and transparent credit available to everyone. Machine-learning credit models have shown ways to boost lending to society's traditionally under-represented borrower groups by embracing inclusive data typically ignored in the traditional financial services credit evaluation process.

AI-driven underwriting also has gained praise from credit unions that have adopted it for the increased productivity of underwriters and loan officers, who spend less time analyzing data and more time making judgments. Most importantly, it frees these professionals to focus on their relationship with members. For those loan decisions that require more attention, they're able to have a conversation to help them figure out the best way to close the auto loan or mortgage. This has longer-term benefits as well. By being freed to focus on the personal relationship with members, it provides opportunities to cross-sell other services, deepening the relationships credit unions have with their members.

Many credit unions are at various stages of their digital transformation journeys and there is no shortage of potential technology projects that seem urgent and promising. Prioritizing technology investment requires dependable returns on that investment with clear, direct benefits to members. AI for underwriting improves lending performance fairly, accelerates loan decisioning transparently, and helps deliver what members and credit unions want most: personalized trusted financial relationships.

"At VyStar, we believe we can't afford to wait. We're proud to be one of the first credit unions to adopt AI-powered underwriting"

VyStar Credit Union

Jenny Vipperman
Chief Lending Officer

How are Credit Unions using AI now?

Reducing Risk

Machine learning helps you build models with much higher precision so you can eliminate bad loans and slash charge-off rates while keeping approvals steady. Zest clients experience a 30% decrease in charge-off rates on average. This is accomplished through advanced math identifying previously unseen indicators of creditworthiness, allowing credit unions to better price their offers – and avoid extending loans with outsized risk.

Expanding Membership

Direct financial benefits to members provide a crucial competitive advantage to credit unions against banks and auto lenders. Cutting charge-offs provides more capital available to offer members higher interest on deposit accounts, lower fees on services and exceptional lending rates to the highest-quality members. Improving financial benefits to existing members is a demonstrated way to attract new members.

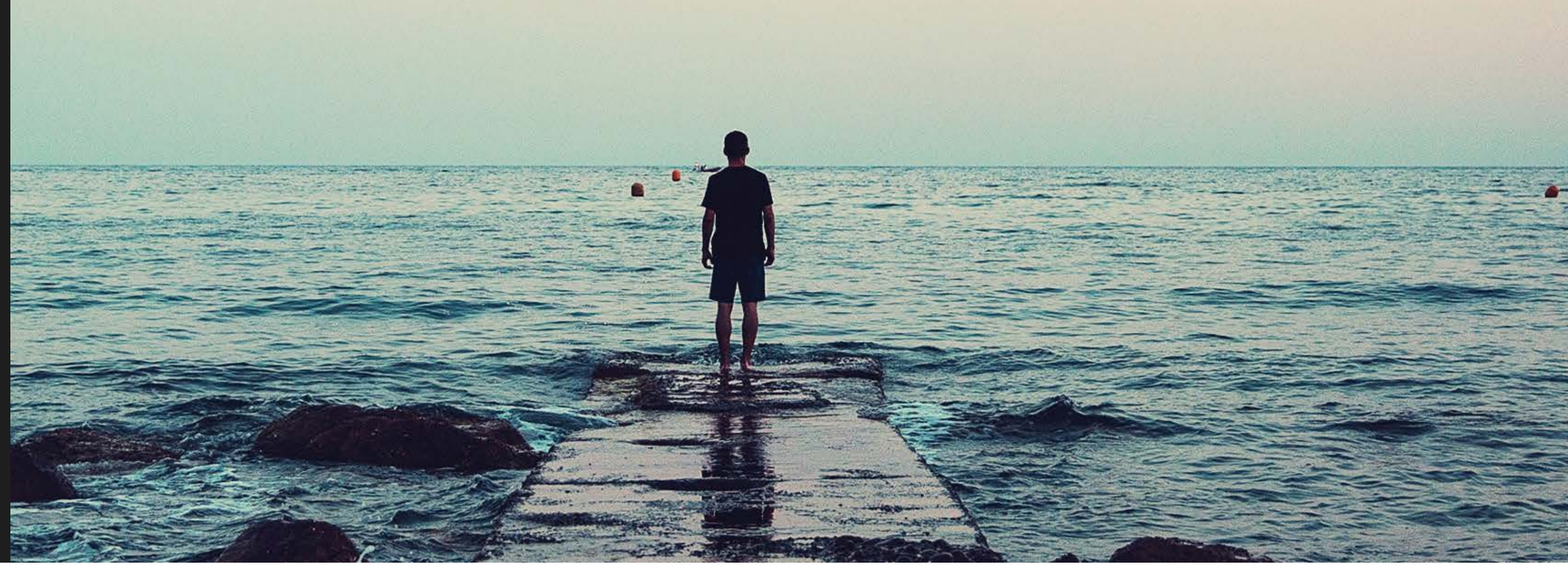
Cross-selling

With better risk assessments and more personalized loan terms, credit union lenders can avoid unhappy or dissatisfied members, allowing officers a chance to cross-sell them on relevant products. In fact, you can even design your machine learning system to pre-approve members for other products while running the decision on the credit product for which they originally applied.

Automated Decisioning

Sometimes lending decisions are clear, and loan officers can let a member know on the spot if they will qualify or not for a loan. Machine learning speeds up and clarifies these ad hoc frameworks to give definitive answers quickly to members. Lenders are able to select more judiciously which members need extra attention before making a decision. Providing better customer service is a hallmark of credit union experience.

Envision AI in your organization



What impact will AI adoption have on my core sytems?

Your organization's core systems are not impacted at all – only the credit model is replaced. The existing technology at the average credit union is sufficient for running machine learning models. It is a common misperception that AI requires a massive upgrade in computing power and a switch to more expensive GPUs (graphical processing units) from CPUs. Our clients have been able to run Zest full-tilt on standard equipment using CPUs. To get a little more technical, machine learning works on common processing engines including Apache Hadoop Yarn and Microsoft SQL. It also works on standalone Unix boxes, Open Database Connectivity (ODBC) APIs for transferring data back and forth as well as microservice architectures that enable flexibility and interoperability.

Plus, Zest integrates with credit bureaus, many common data providers, and loan origination systems — AI underwriting can have a small footprint, but large impact on your organization.

How do I know if my core systems are AI ready?

If your systems are able to pull in external information, such as credit bureau data, they are likely already capable of machine learning integration. AI advanced math actually makes using information from various systems easier than in other computing and statistical methods you might be aware of. Without getting too technical, machine learning methods don't require perfect or complete data sets to operate, which means we can skip much of the usual intensive IT efforts to format data for new applications.

How will automation impact my employees?

Credit unions that have implemented AI-driven lending praise the approach for freeing up their underwriters from mundane paperwork on clear approvals and rejections, allowing them to return to high value tasks and activities focused on members. Less time spent with heads in spreadsheets means they can spend more time interacting with members who don't get immediate approval. Continuing to deliver white-glove service even as the credit union grows is a key differentiator and valuable experience members don't find elsewhere.

Data Needs & Compatability

What data do I need?

Zest customers have found the most value by making the following data sets available for modeling: credit bureau data, application data, alternative data, collateral information. Any other internal information the credit union possesses which it wants to use in the approval process can be folded in as well. Machine learning systems can use thousands of data points for every applicant if so desired.

How much data do I need?

You likely already have enough data on which to design, train and deploy an AI model. Typically a credit union averaging 1,000 applications or more per month has enough data to build an effective machine learning model. For those below that level – or those wishing to pull in even more data – you can purchase more data from third parties such as credit bureaus and LexisNexis for design and testing. At Zest, we've even built models solely on third-party data for new product lines. In cases where model development relies on purchased data, it's especially important to monitor the model in the early stages of production to make sure it's responding to the quality applicants you're seeing.

What's required for a speedy implementation?

Success comes from a willingness in the organization to embrace new technology. The challenge isn't the technology itself. Executives know machine learning holds important promise for making the business thrive. But convincing an organization to take the leap — that can be the real challenge. Often, coalition building in support of machine learning among various stakeholders ahead of development eases the process tremendously. Discuss with business leaders, credit modelers, model validation team, credit risk, and regulatory compliance officers early and then periodically through implementation. On a practical technological terms, credit unions with an LOS that supports API integrations makes model development and deployment much easier.

Evaluating AI Adoption for Your Organization

How long will it take to build a model?

A Zest model takes, on average, eight to ten weeks to build, test and deploy into production. We're consistently shortening that time frame too (in fact, in some circumstances we can deliver an AI model in a day.) That's compared to 12 to 18 months for models built the traditional way either in-house or by a vendor.

How many data scientists will I need?

None, if you want. Zest AI can be delivered under a managed service model requiring no additional resources on your side. Under a license or self-service model, Zest works with your existing technology structure so IT professionals aren't shut out. Your IT team will be able to use the latest open-source data science and machine learning tools in concert with Zest. Our professional service team can supplement and guide in-house experts to roll out Zest effectively.

What metrics determine if machine learning is better than my existing approach?

Unless your approvals are near 100% and charge offs are close to 0%, AI will help. AI-powered models will outperform traditional models by making full use of your available data. It starts with the statistical methods machine learning uses. Oversimplifying just a bit, traditional models use a binary either/or decision tree. AI is able to use a statistical approach that examines relationships among all variables and subsets of those variables to provide a greater spectrum of risk profiles. Furthermore, AI captures subtle patterns or interaction effects completely missed or unusable by traditional approaches. Think of traditional models as the resolution found on old, tube TV sets compared to 4K UHD sets of today. Both present an image you can use, but one is much more detailed with greater clarity.

Setting AI Adoption Up for Success

How do you deal with personal identifying information?

Zest does not need any personal identifying information during the model build process. We use only the most-secure cloud environments for any data that isn't held within your walls. The trust we've earned from our clients, including numerous leading financial institutions, attests to our protection of sensitive data and the importance of your member data to us throughout the process.

How will we prove AI underwriting is actually working?

A full economic impact analysis is provided before you fully commit to your new custom model. You and your team are encouraged to examine our testing process of your model. You can discuss with us in detail to make sure your institution is satisfied with the Zest model you have and recognize the value being added to your credit underwriting businesses.

How will we prove historical predictions translate to future ones?

Zest AI follows industry-standard champion-challenger methodology to test model performance using out-of-time testing and validation data sets. Champion-challenger allows monitoring of decisions in a 'real-time' reenactment of new AI models and current traditional models, by distributing the historic transactions "live" to different variations of the same decision. This allows you to accurately gauge the improvement in approval rates, volume and charge-off rates.

Plus, a period of 'dark scoring' helps to ensure the accuracy and performance of the trained model and test sets match your live production environment and applicant pool. Your new AI model runs in parallel with your current model, both providing their predicted scores and decisions on applicants but without disrupting your existing rules or decisioning engine.

Regulatory Compliance

How does Zest handle monitoring?

Zest AI monitors ensure incoming applicants are representative of the training set the model was built on. When applicants are inconsistent with expectations and assumptions, Zest automatically alerts you, allowing credit unions to manage for immediate risk and retrain the model for longer term effectiveness.

What if we need to refit or rebuild our model?

Zest continuously monitors the applicant pool to highlight the statistically relevant changes you need to adjust for. The refit process itself is heavily automated, allowing for very fast refits with minimal effort, compared to the drawn out process of refitting traditionally constructed models that can take months to rebuild, validate, document, and redeploy.

How does Zest handle adverse actions?

Zest offers patented explainability to deliver adverse action reasons that are accurate and compliant with regulations. We fully explain the impact of all variables and interactions for gradient boosted tree and deep neural network machine learning models. Zest AI does not rely on constraints or any other limitations to explain models. This is essential because other methods in the industry can be wildly inaccurate and actual can increase your regulatory risk.

What if we get audited?

Zest AI is built from the ground up with explainability tools that detail how and why AI models reach the decisions they do. Our auto-documentation tool captures all modeling inputs and results in a detailed Model Risk Management document that fully describes the deployed model. Your complete modelling process is documented with citations needed to satisfy your compliance group and regulators, including the Federal Reserve, Office of Comptroller of the Currency, Federal Deposit Insurance Corp. and for regulations including ECOA and FCRA and the European Union’s GDPR.

Still have questions about AI for Credit Unions?

Our team of financial services and data science experts can help you work through what makes the most sense for your member base and lending goals.